

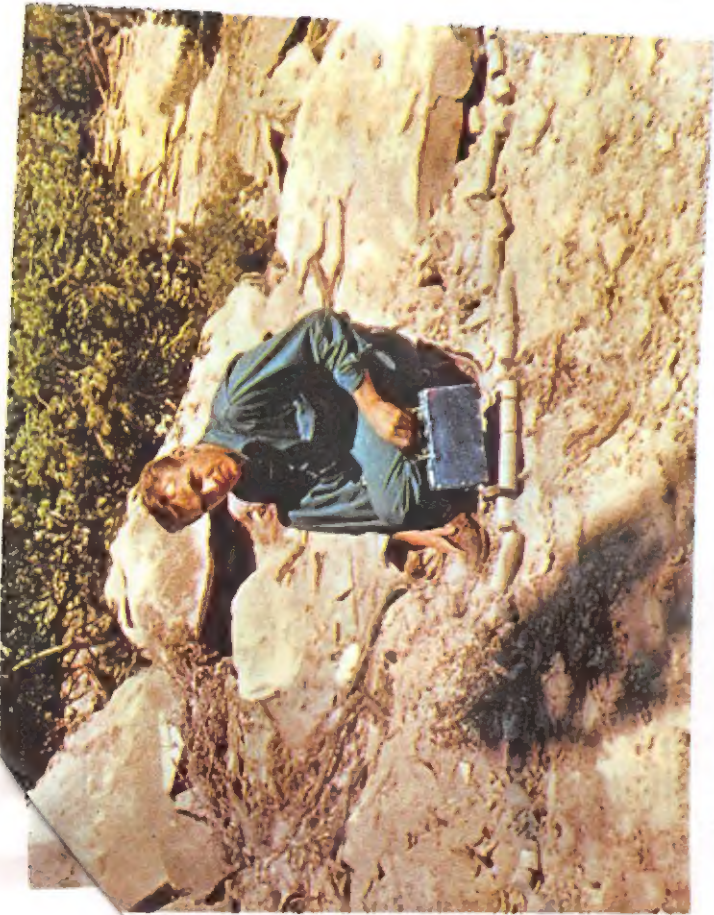
"Thar's gold in them thar hills." A prospector, lured to the West by tales of riches, pans the bed of a stream.



A miner drills a hole into an ore seam in a Nova Scotia coal mine. When the explosive is detonated, the blast breaks the coal into pieces which can be shoveled into hopper cars. Nova Scotia is Canada's leading coal mining province.



Prospectors use highly sensitive radioactivity detection instruments when searching for uranium. The mineral-rich plateau of northern Canada, the Canadian Shield, covers most of Ontario, and the province has an abundant supply of valuable ores.



In his search for uranium, this young prospector is using a sensitive instrument, much like a Geiger counter.

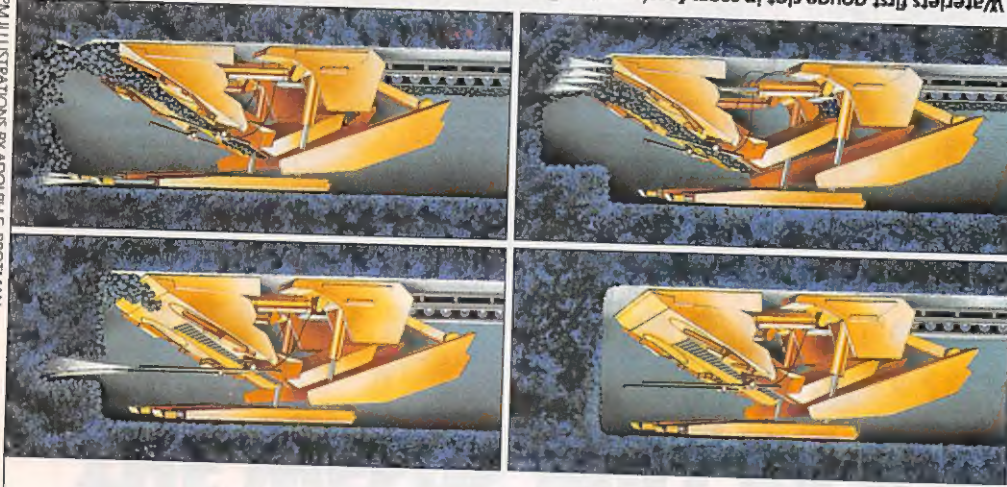
TECH UPDATE

MAY 1991

Squirt Gun Coal Miner

ROLLA, MO.—For years, coal miners have inhaled dangerous dust and risked cave-ins, even when working with mechanized excavators. A radical new machine should eliminate both threats. It's called RAPIERS (Room And Pillar In-Seam Excavator/Roof Supporter). Instead of swinging a mechanical pick, RAPIERS fires high-pressure water-jets as it juggernauts its way into a coal seam. First, a pair of jet-lances carve a horizontal slot in the center of the seam's face. Then jets slot the top and bottom of the face, and wedge-shaped cutters move in to crush coal toward the midface slot.

Two counterrotating arms gather the coal pieces onto a conveyor belt. Once both top and bottom wedges have pushed forward, pistons at the excavator's rear retract, and RAPIERS walks forward to start anew. By dampening the coal, the waterjets keep dust levels low. In addition, the top wedge can shore up the tunnel's ceiling until miners insert support bolts. The University of Missouri Laboratory have teamed to build a prototype.



Waterjets first gouge slot in seam face's center. Bottom wedge then fires jets and drives into the base, crushing coal toward the slot. Twin top wedges finish the job. RAPIERS' rear then waddles forward.

PM ILLUSTRATIONS BY ADOLPH E. BROTMAN